

Comparison of OMPS LP aerosol profiles with CALIPSO

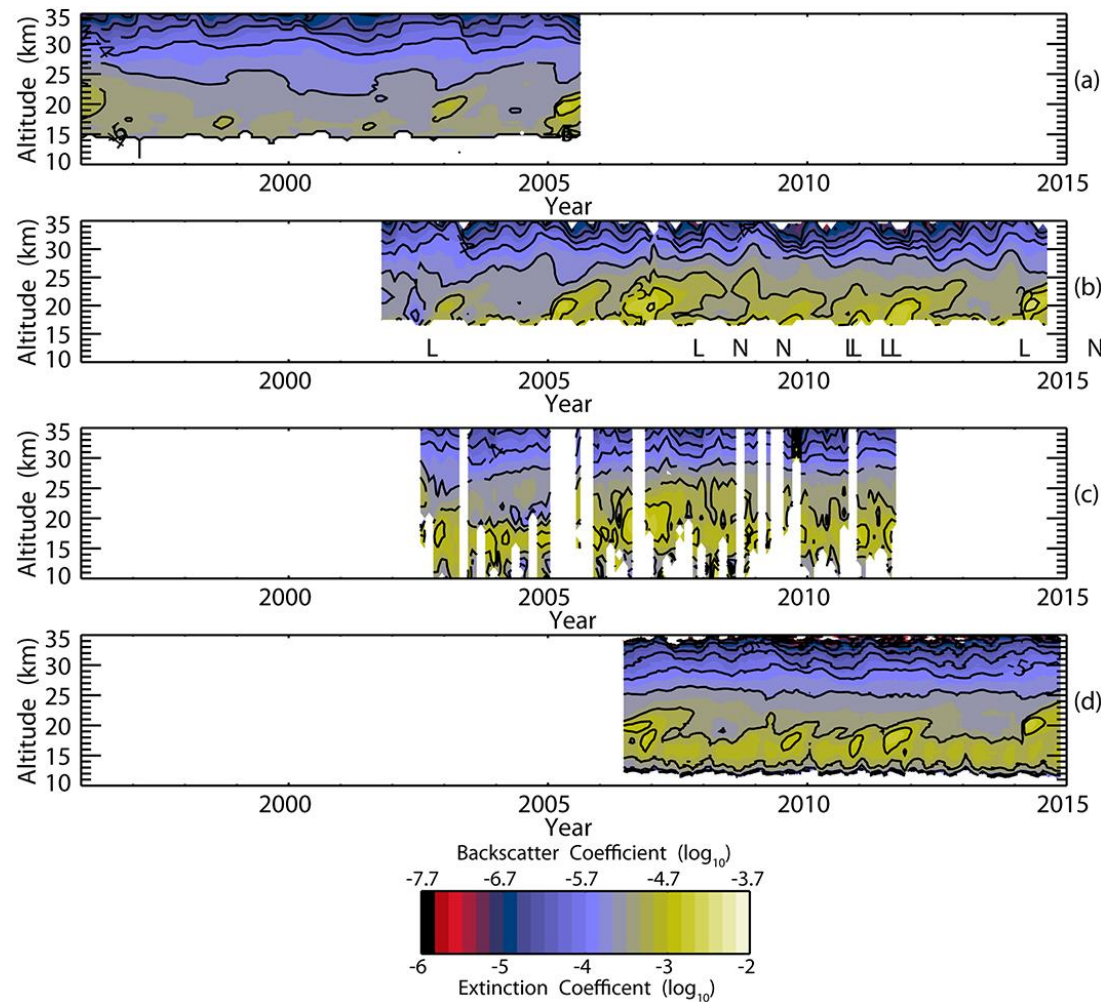
Ghassan Taha

USRA

Approach

- CALIPSO data averaged vertically and zonally using nighttime backscatter coefficient at 532 nm (0.6km vertical and 500km horizontal).
 - Monthly means, 5° latitudes zones
 - CALIPSO uses “conservative” approach for cloud clearing
 - Cloud mask derived from average depolarization ratio threshold
 - 8-40km altitude range
 - CALIPSO backscatter converted to extinction using lidar ratio of **50 sr⁻¹**
- Converted to 675 nm using $\alpha=2.3$ and interpolated to OMPS altitudes
- OMPS aerosol is screened for clouds using Chen et al., 2016.
 - Monthly zonal median, 5° latitudes zones

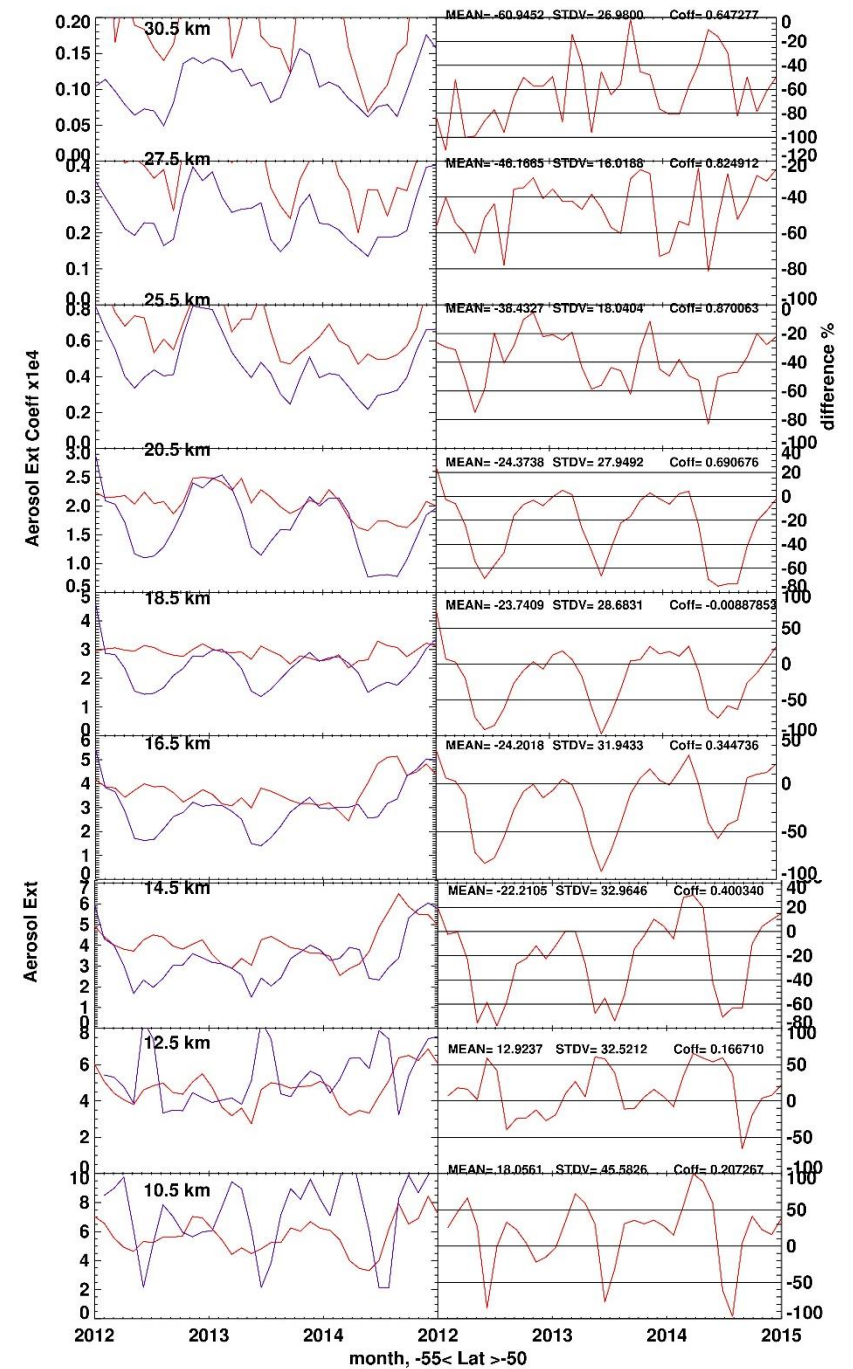
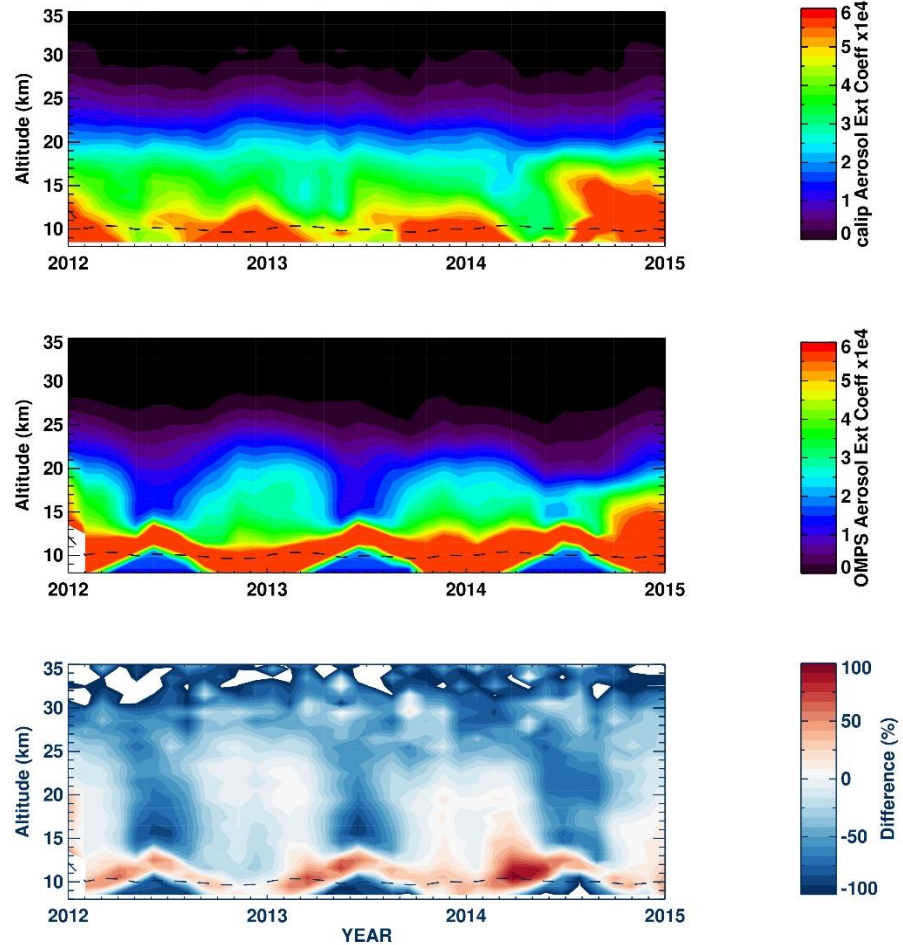
Stratospheric aerosol review paper



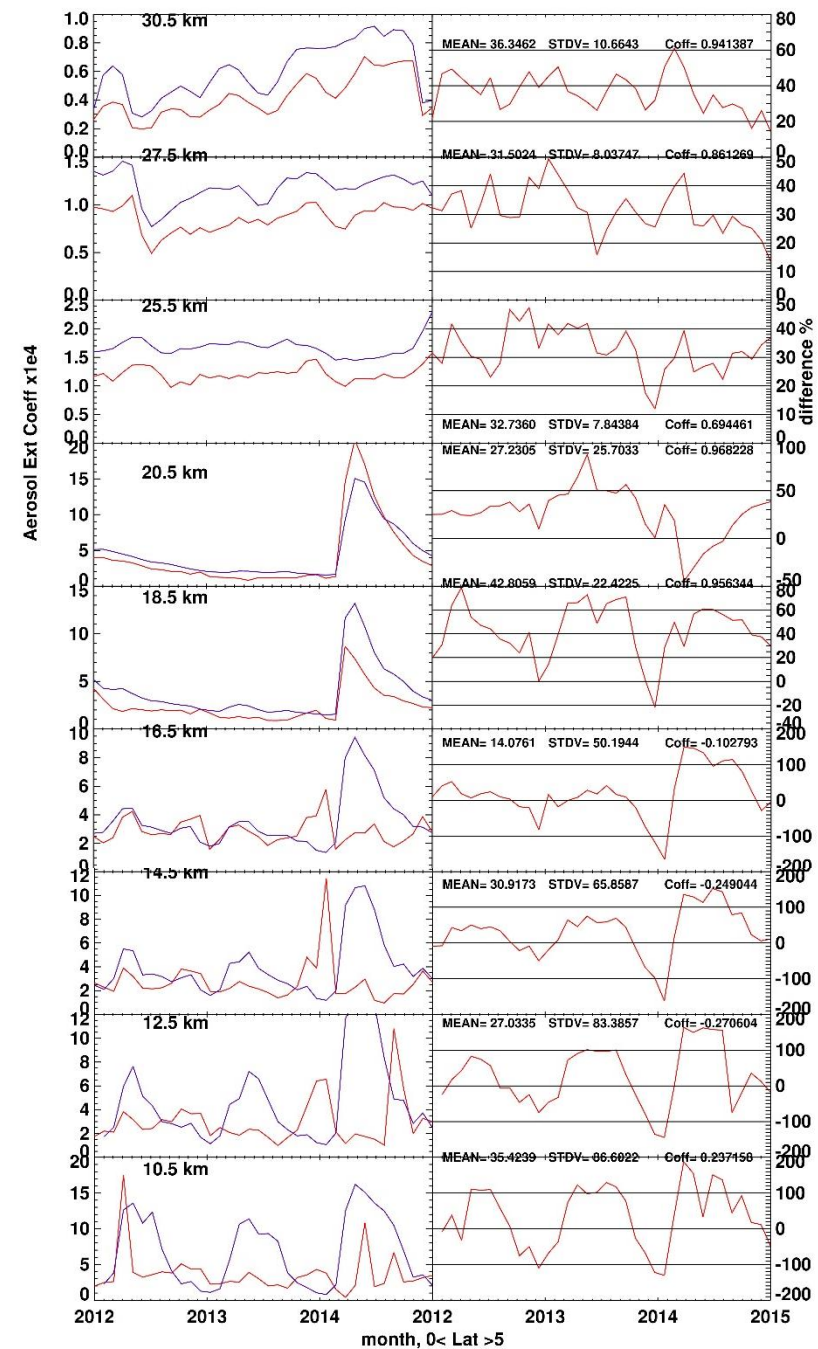
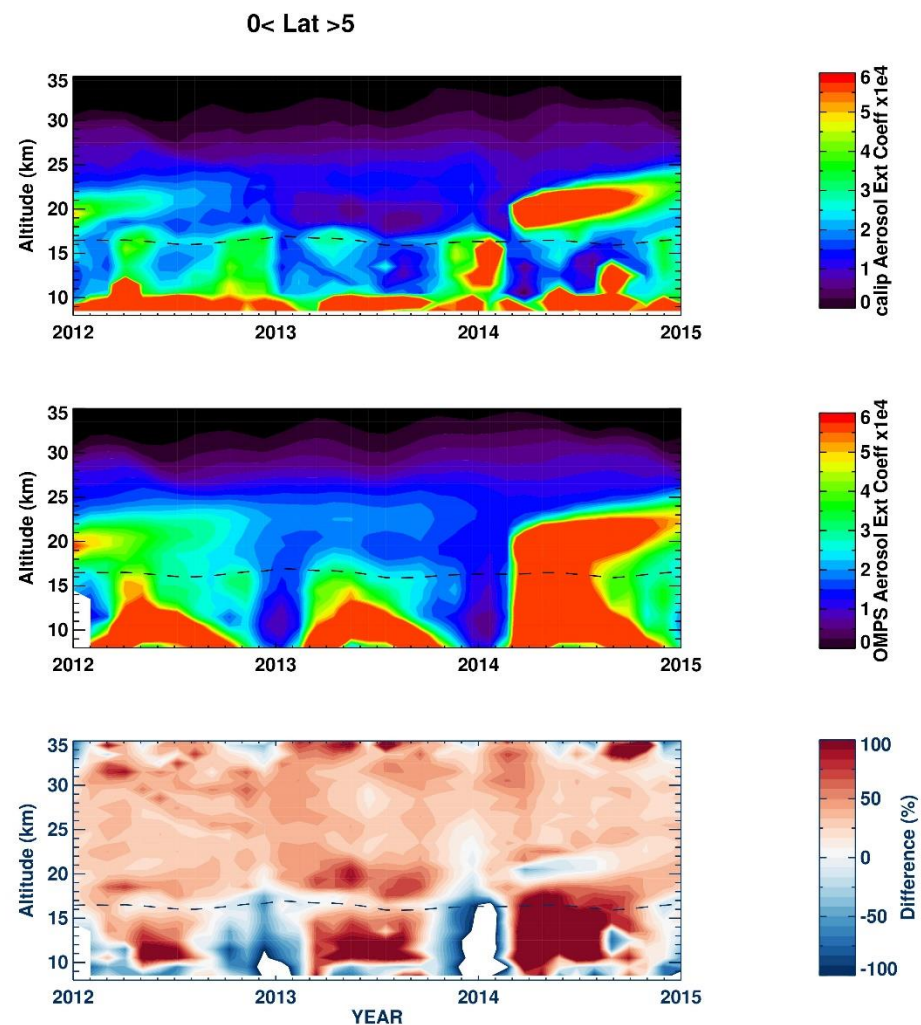
The 1 month by 0.5 km mean aerosol parameter between 10°S and 10°N as measured by (a) SAGE II (525 nm extinction coefficient), (b) OSIRIS (converted to 525 nm extinction coefficient), (c) GOMOS (500 nm extinction coefficient), and (d) CALIPSO (532 nm backscatter coefficient). The color scale is the same for Figures a to c but has been scaled by a factor of 1/50 for Figure d to account for the conversion of midvisible backscatter coefficient to extinction coefficient at the same wavelength and, thus, improve the visual consistency of these images. Kremser et al., [2016].

OMPS LP vs. CALIPSO (SH)

-55 < Lat < 50

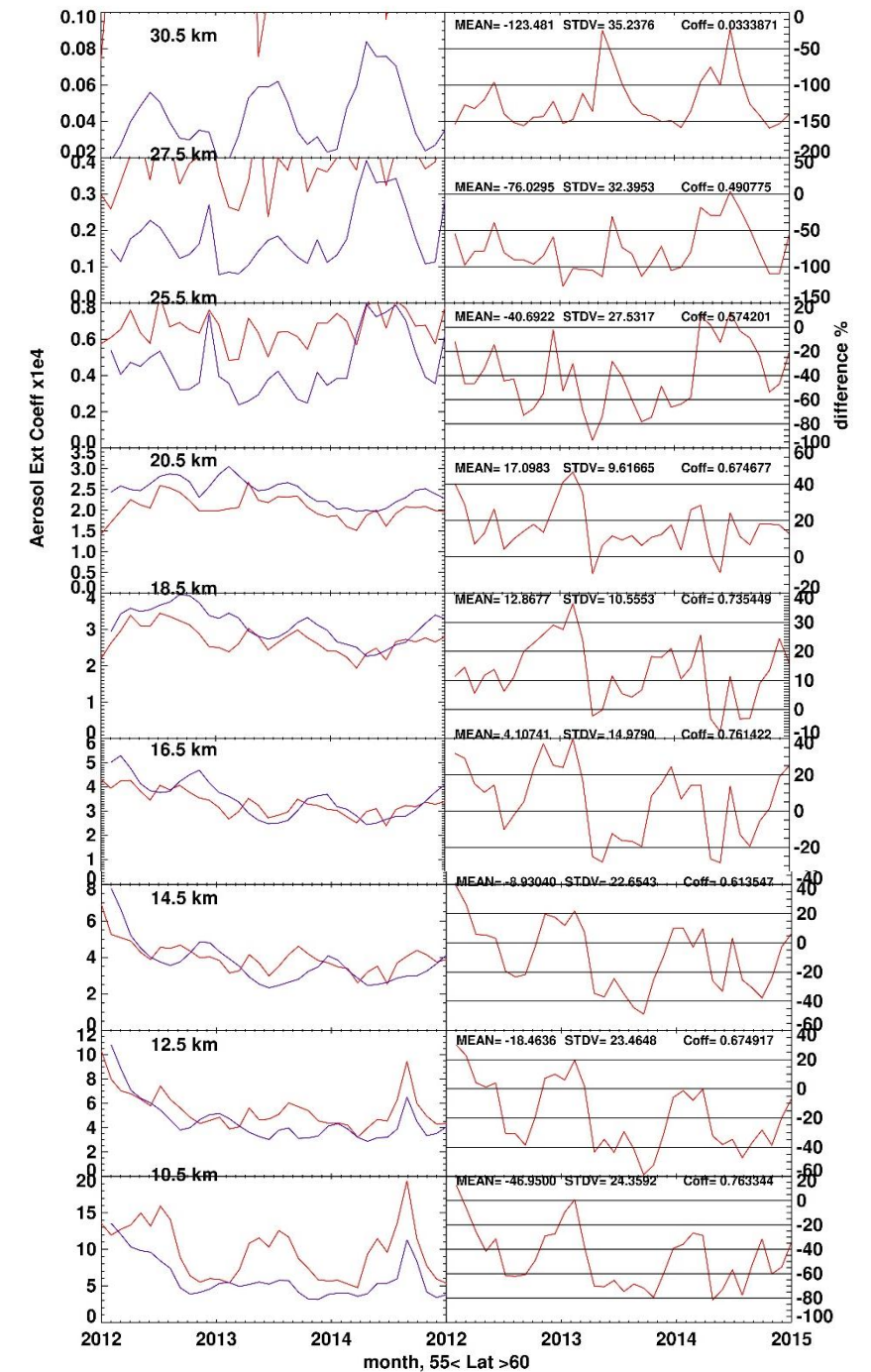
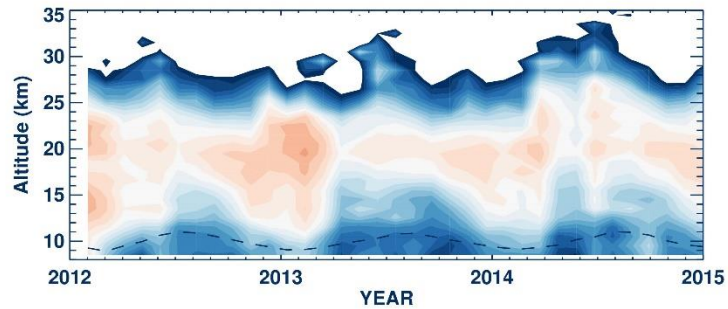
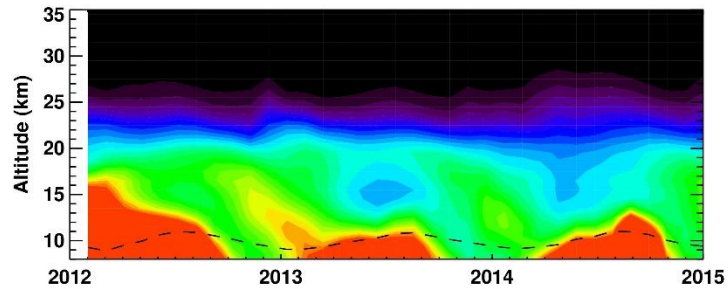
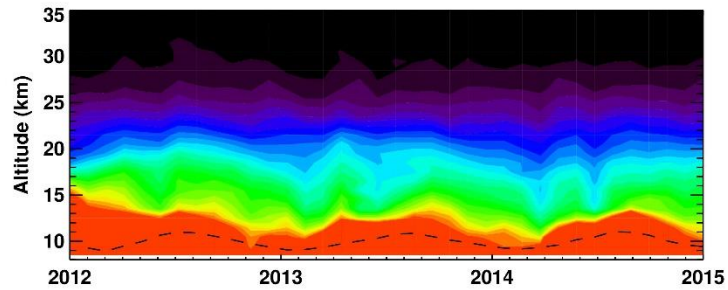


OMPS LP vs. CALIPSO (Tropics)

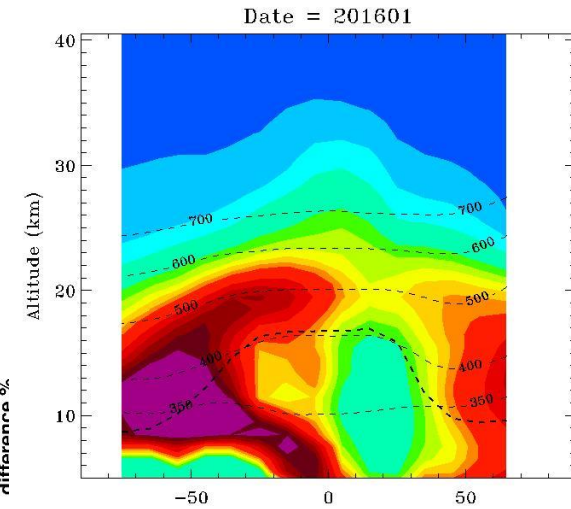
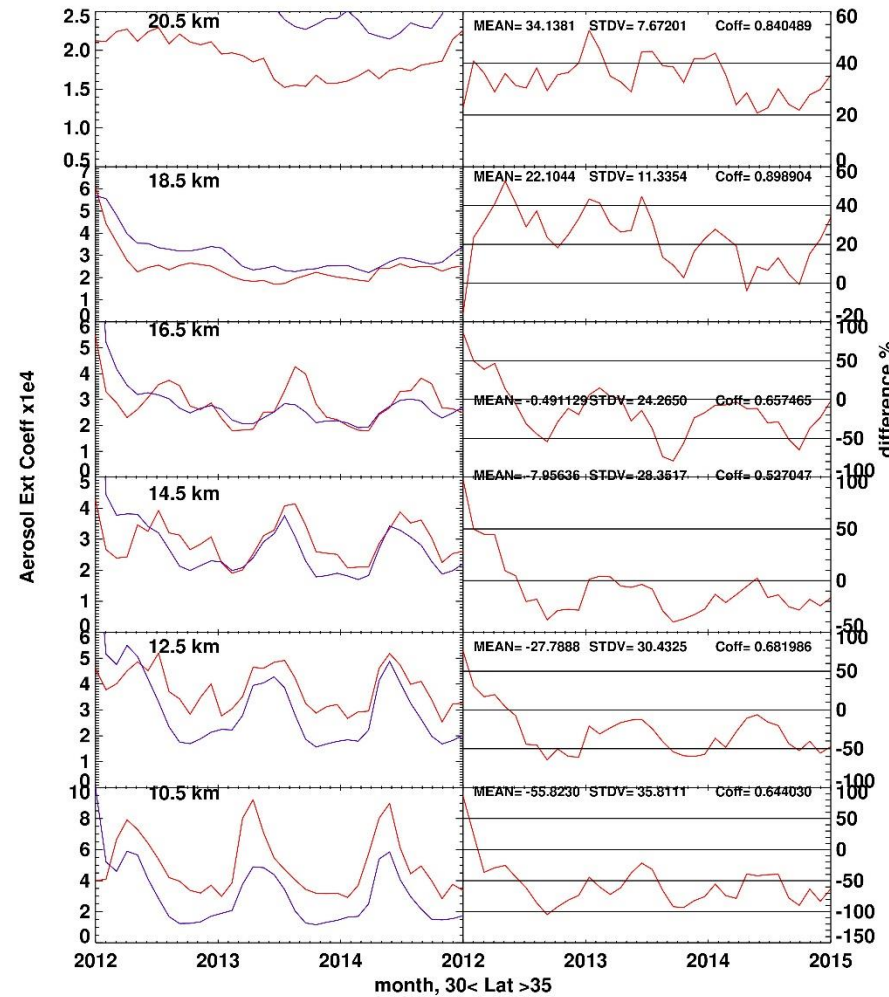
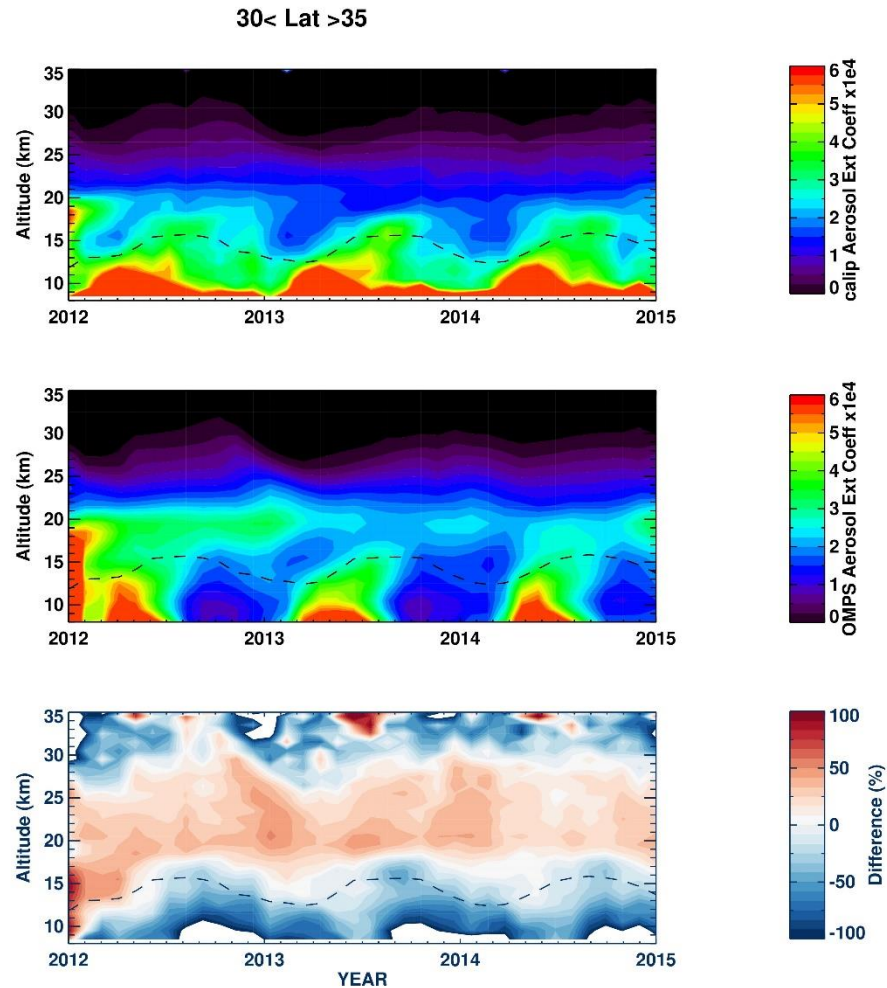


OMPS LP vs. CALIPSO (NH)

55< Lat >60

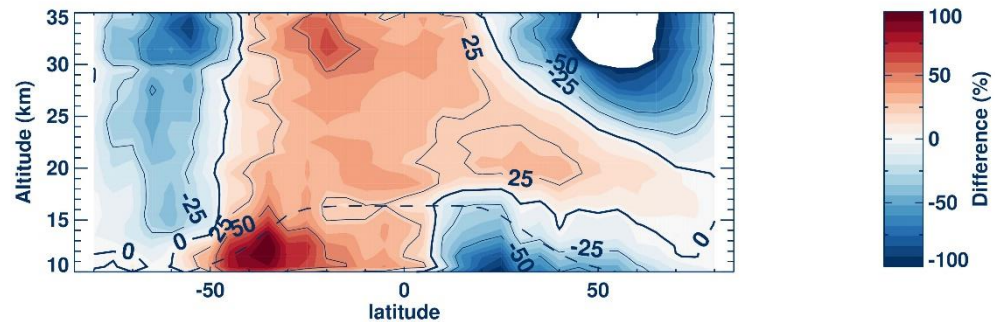
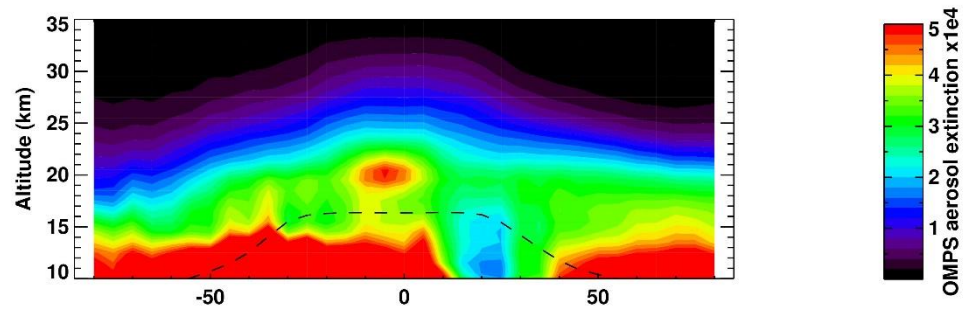
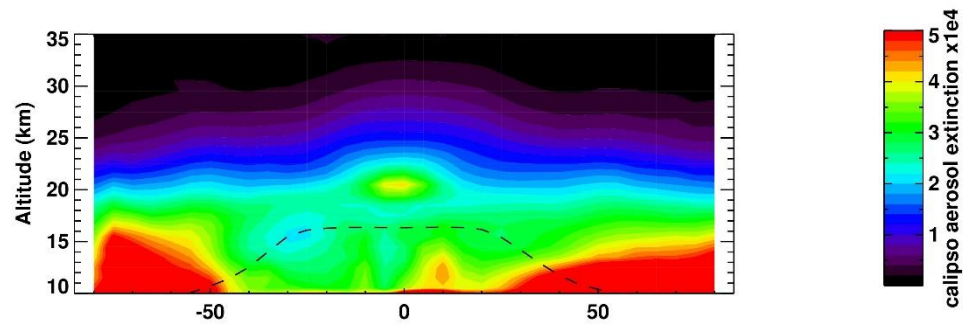


Aerosol minima in (nh)

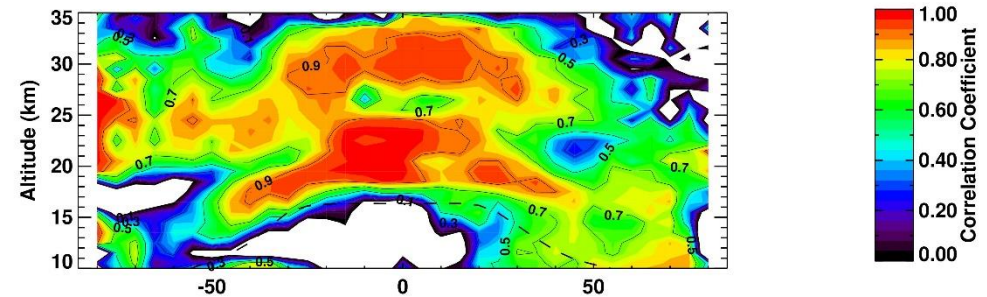


- Aerosol minima during Sept-March in NH 10 -16km

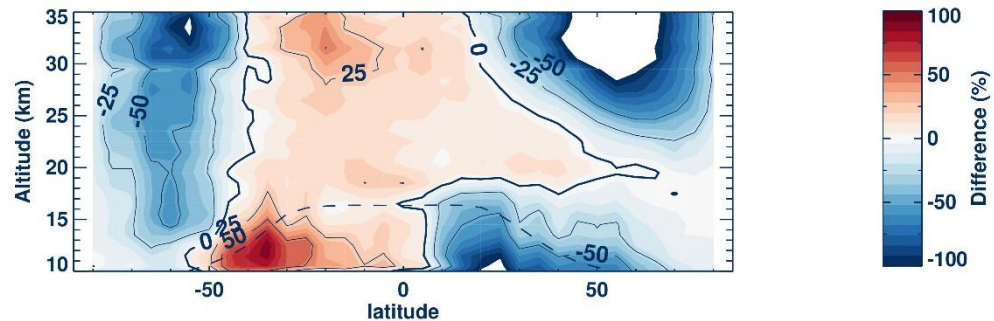
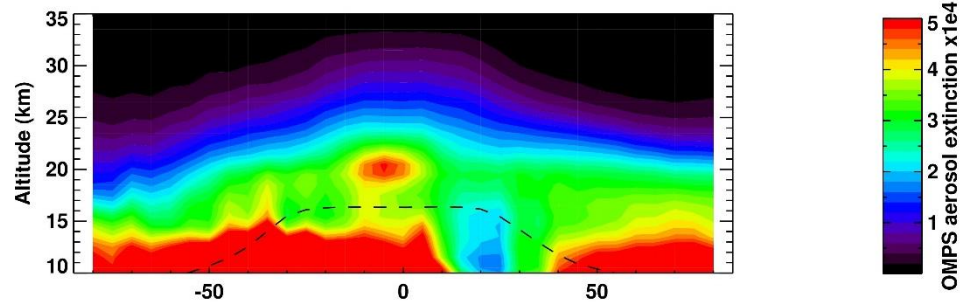
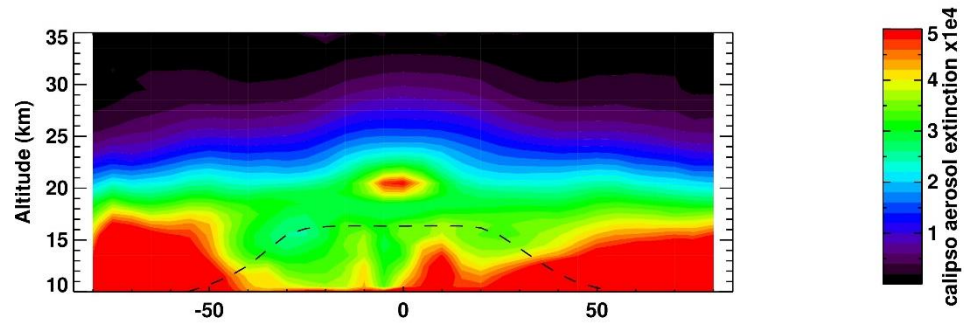
Summary Difference LP - CALIPSO



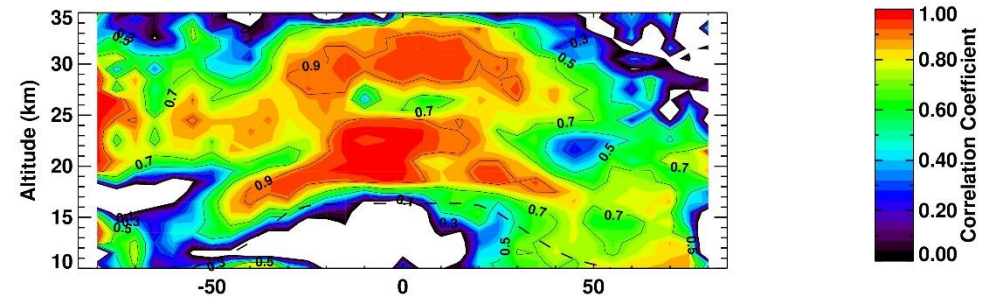
Correlation coefficient



Summary Difference LP - CALIPSO (Lidar ratio 60 sr⁻¹)

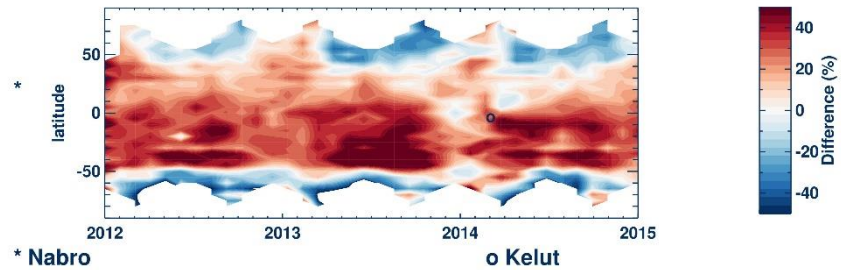
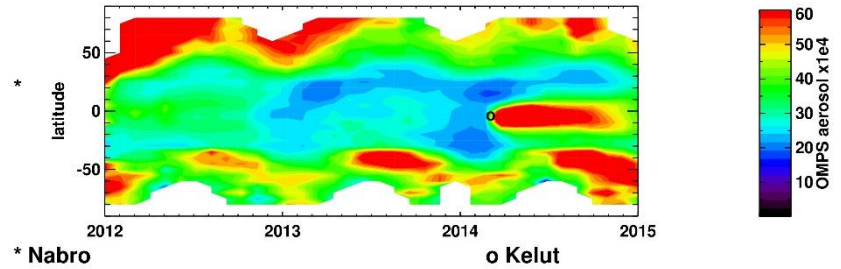
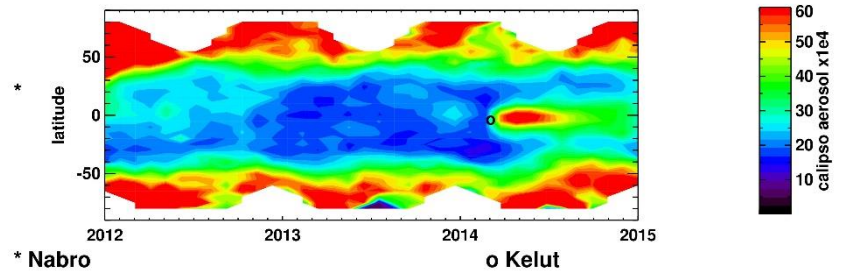


Correlation coefficient

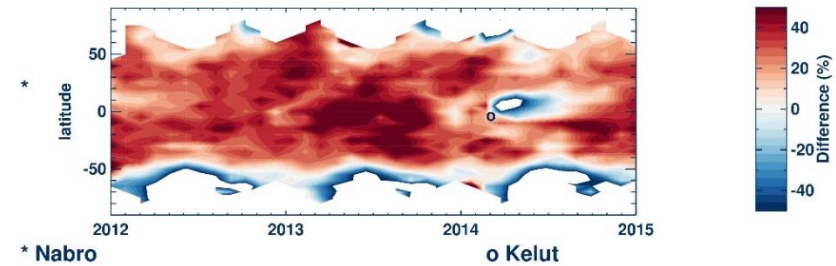
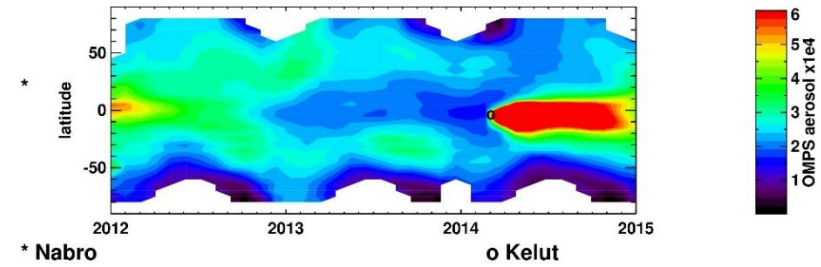
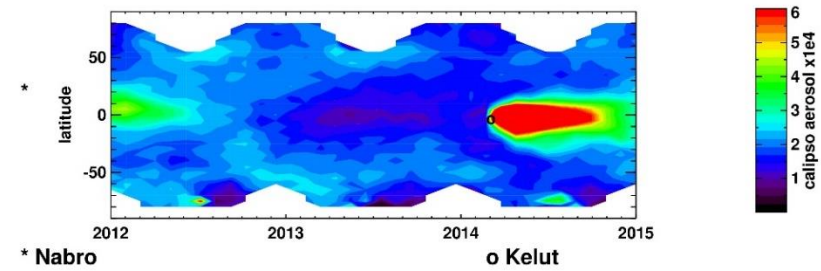


Summary Difference LP - CALIPSO

Stratospheric aerosol total column



Stratospheric aerosol ext 20 km



Summary Difference LP - CALIPSO (Lidar ratio 60 sr⁻¹)

